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ant.
electrode and [a] said common electrode [forming part of said
electrode structure] and a distance d between said pair of
substrates is $l/d \geq 2.0$.

REMARKS

The allowance of claims 12 and 15, and the indication that claims 8 and 9-11 would be allowable if rewritten or amended to overcome rejection under 35 U.S.C. §112, second paragraph, is acknowledged.

By the present amendment, applicants submit that the claims under rejection under 35 U.S.C. §112, second paragraph, have been amended so as to overcome such rejection, such that claims 8 and 9-11 and other claims, as discussed below, should now be in condition for allowance.

As to the rejection of claims 1-11 and 13 under 35 U.S.C. §112, second paragraph, this rejection is traversed insofar as it is applicable to the present claims, and reconsideration and withdrawal of the rejection are respectfully requested.

Applicants note that in setting forth the rejection, the Examiner points out that the claims do not recite a liquid crystal chemical compound, but rather merely a liquid chemical compound. By the present amendment, the independent and dependent claims under rejection, where appropriate, have been amended to recite a liquid crystal chemical compound, such that this rejection should now be overcome, and claim 8 should

now be in condition for allowance as indicated by the Examiner together with its dependent claims 9-11.

With respect to claim 13, which depends from allowed claim 12, claim 13 has been amended to recite a liquid crystal chemical compound, such that claim 13 should be considered allowed with allowed parent claim 12, the rejection of claim 13 under 35 U.S.C. §112, second paragraph, having been overcome.

OK As to the rejection of claim 14 apparently under 35 U.S.C. §112, second paragraph, apparently on the ground that there is insufficient antecedent basis for the indicated limitation, it is noted that the Office Action does not set forth a rejection of claim 14 under 35 U.S.C. §112. However, in an attempt to continue the prosecution of this application in an expeditious manner, claim 14 has been amended in a manner which should overcome any perceived rejection under 35 U.S.C. §112, second paragraph, which rejection is traversed, if considered to be made.

More particularly, although claim 14, contrary to the position by the Examiner, is considered to provide the recited structure in a proper format, claim 14 has been amended to recite the feature that said electrode structure includes a pixel electrode spaced from a common electrode and said pair of substrates are spaced from one another while particularly setting forth the relationship thereof. As such, claim 14

which depends from allowed claim 12 should be considered to be in compliance with 35 U.S.C. §112, second paragraph, and should be considered allowable with its allowed parent claim 12. Accordingly, claims 12-15 should now be in condition for allowance.

As to the rejection of claim 4 under 35 U.S.C. §103(a) as being unpatentable over Klanderman et al (US 3,960,748), this rejection is traversed insofar as it is applicable to the present claim, and reconsideration and withdrawal of the rejection are respectfully requested.

By the above amendment, claim 4 has been amended to recite a liquid crystal composite material adapted to be used in a liquid crystal layer of a liquid crystal display device having a pair of substrates with the liquid crystal layer interposed therebetween, and an electrode structure for generating an electric field having a component predominantly in parallel with one of said pair of said substrates: wherein said liquid crystal composite material has a resistivity which is no greater than $1 \times 10^{13} \Omega \cdot \text{cm}$ and greater than $1 \times 10^{10} \Omega \cdot \text{cm}$. Applicants submit that such features are not disclosed in the cited art.

Irrespective of the Examiner's contention concerning the resistivity disclosure of the nematic liquid crystal composition of Klanderman et al, by the present amendment, the range of resistivity has been amended to be outside and

greater than the range of resistivity disclosed by Klanderman et al which is "about 1×10^8 to 1×10^{10} ohm-cm" (claim 1, for example). Moreover, the Examiner recognizes that Klanderman et al does not disclose that the claimed liquid crystal composite material is, as now claimed, adapted to be used in a liquid crystal layer of a display device having an electrode structure for generating an electric field having a component predominantly in parallel with one of the pair of substrates. Applicants submit that the claimed range is clearly outside the range disclosed by Klanderman et al which has an upper limit of 1×10^{10} ohm-cm and clearly, Klanderman et al does not disclose or teach the claimed range of resistivity.

Additionally, while the Examiner cites the decision of In re Pearson, 181 USPQ 641 (CCPA 1974), in such decision, the court stated "We do not mean to apply that terms which recite the intended use of property of a composition can never be used to distinguish a new from an old composition." Applicants submit that it is readily apparent that claim 4, as amended, patentably distinguishes over Klanderman et al and should be considered allowable thereover.

Applicants note that in paragraph 8 of the Office Action, the Examiner indicates that "The rejections over Jubb et al and Nolan et al in the previous Office Action are still maintained because the present invention (Claims 1-7) is claimed a liquid crystal composite material." Thus, it is

apparent that the Examiner has not presented a proper statement of a rejection. In any event, with respect to the prior rejection of claims 1, 3-5, 6 and 7 under 35 U.S.C. §103(a) as being unpatentable over Jubb et al and the rejection of claims 1-5, 6 and 7 under 35 U.S.C. §103(a) as being unpatentable over Nolan et al, such rejections are traversed insofar as they are applicable to the present claims, and reconsideration and withdrawal of the rejections are respectfully requested.

At the outset, reference is made to the decision of In re Fine, 5 USPQ 2d 1596 (Fed. Cir. 1988), wherein the court pointed out that the PTO has the burden under §103 to establish a prima facie case of obviousness and can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. As noted by the court, whether a particular combination might be "obvious to try" is not a legitimate test of patentability and obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. As further noted by the court, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

Irrespective of the position by the Examiner that the structural features of the liquid crystal display are not considered, applicants note that by the present amendment, the claims recite a liquid crystal composition material adapted to be used in a liquid crystal display device having the structural features as recited, and such features cannot be ignored. Applicants submit that the cited art does not provide the claimed features as recited in such claims and, more particularly, independent claims 3 and 5 recite a relation between an elasticity constant and a dielectric anisotropy and such features are not disclosed in the cited art, irrespective of the Examiner's attempt to not consider the structural features concerning the liquid crystal display device. Insofar as the Examiner contends that such features are inherent, it is apparent from the specification of this application that such features are not inherent and reference is made to the decision of In re Robertson, 49 USPQ 2d.1949 (Fed. Cir. 1999), wherein the court set out clear standards for establishing inherency, indicating that:

To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. (emphasis added)

Applicants submit that at least claims 3 and 5 patentably distinguish over this cited art in the sense of 35 U.S.C. §103(a) and should be considered allowable at this time.

With respect to claim 4, applicants note that such claim recites a resistivity range which is not disclosed or taught by Jubb et al, Nolan et al or Klanderman et al in the sense of 35 U.S.C. §103, such that claim 4 and its dependent claims should also be considered allowable at this time.

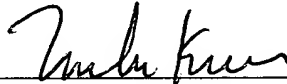
With respect to claim 7, irrespective of the Examiner's position that structural features cannot be considered, claim 7 further defines the structural features and a particular relationship, and applicants submit that the Examiner cannot ignore such features which are not disclosed or taught in the cited art. As such, claim 7 which depends from claim 4, should also be considered allowable at this time.

In view of the above amendments and remarks, applicants submit that all claims present in this application recite features not disclosed or taught in the cited art, and in addition to the allowed claims and the claims indicated as being allowable, the remaining claims present in this application patentably distinguish over the cited art, and should now be in condition for allowance. Accordingly, issuance of an action of a favorable nature is courteously solicited.

To the extent necessary, applicant's petition for an

extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (503.33612CX1) and please credit any excess fees to such deposit account.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read 'Melvin Kraus', is written over a horizontal line.

Melvin Kraus

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

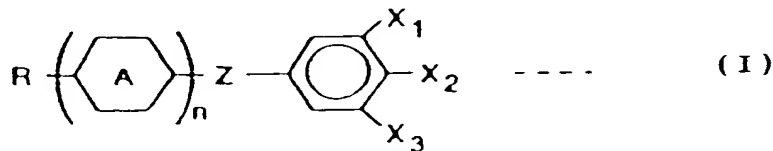
IN THE CLAIMS:

Please amend claims 1, 3 and 4 as follows:

1. (twice amended) A liquid crystal composite material [for use] adapted to be used in a liquid crystal layer of a liquid crystal display device having a pair of substrates with the liquid crystal layer interposed therebetween, and an electrode structure for generating an electric field having a component predominantly in parallel with one of said pair of substrates, said electrode structure including a pixel electrode and a common electrode;

wherein a relationship between a distance l between said pixel electrode and said common electrode and a distance d between said pair of substrates is $l/d \geq 2.0$; and

wherein said liquid crystal composite material includes a liquid crystal chemical compound represented by a general chemical formula (I)

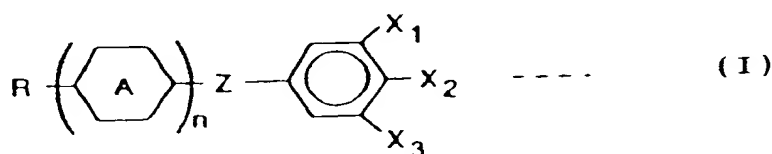


wherein in the formula (I), X_1 , X_2 and X_3 are selected from a group consisting of fluoro group, cyano group, trifluoromethyl group, trifluoromethoxyl group, nitro group and hydrogen atom, not all three X_1 , X_2 and X_3 being a hydrogen group; R is selected from a group consisting of alkyl group

and alkoxyl group having the carbon number 1 to 10 which can be substituted; Ring A is selected from a group consisting of cyclohexane ring, benzene ring, dioxane ring, pyrimidine ring, and-bicyclohexane ring, Z is selected from a group consisting of single bonding, ester bonding, ether bonding, methylene, and ethylene; and n is 1 or 2.

3. (twice amended) A liquid crystal composite material [for use] adapted to be used in a liquid crystal layer of a liquid crystal display device having a pair of substrates with the liquid crystal layer interposed therebetween, and an electrode structure for generating an electric field having a component predominantly in parallel with one of said pair of substrates;

wherein said liquid crystal composite material includes a liquid crystal chemical compound represented by a general chemical formula (I)



wherein in the formula (I), X_1 , X_2 and X_3 are selected from a group consisting of fluoro group, cyano group, trifluoromethyl group, trifluoromethoxyl group, nitro group and hydrogen atom, not all three X_1 , X_2 and X_3 being a hydrogen group; R is selected from a group consisting of alkyl group and alkoxyl group having the carbon number 1 to 10 which can be substituted; Ring A is selected from a group consisting of

cyclohexane ring, benzene ring, dioxane ring, pyrimidine ring, and-bicyclohexane ring, Z is selected from a group consisting of single bonding, ester bonding, ether bonding, methylene, and ethylene; and n is 1 or 2; and

wherein a relation between an elasticity constant K_2 and a dielectric anisotropy $\Delta\epsilon$ of said liquid crystal composite material satisfies the relation $K_2/\Delta\epsilon < 9 \times 10^{-8}$.

4. (amended) A liquid crystal composite material [for use] adapted to be used in a liquid crystal layer of a liquid crystal display device having a pair of substrates with the liquid crystal layer interposed therebetween, and an electrode structure for generating an electric field having a component predominantly in parallel with one of said pair of said substrates;

wherein said liquid composite material has a resistivity which is no greater than $1 \times 10^{13} \Omega \cdot \text{cm}$ and [not less] greater than $1 \times [10^9] \underline{10^{10}} \Omega \cdot \text{cm}$.

Please rewrite claim 5 in independent form as follows:

5. (amended) A liquid crystal composite material [according to claim 4,] adapted to be used in a liquid crystal layer of a liquid crystal display device having a pair of substrates with the liquid crystal layer interposed therebetween, and an electrode structure for generating an electric field having a component predominantly in parallel with one of said pair of said substrates;

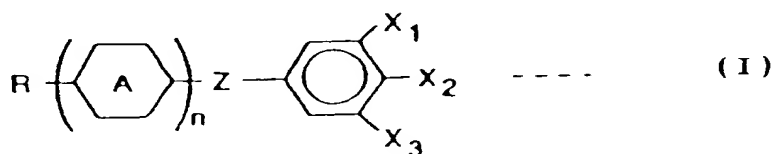
wherein said liquid composite material has a resistivity

which is no greater than $1 \times 10^{13} \Omega \cdot \text{cm}$ and not less than $1 \times 10^9 \Omega \cdot \text{cm}$; and

wherein a relation between an elasticity constant K_2 and a dielectric anisotropy $\Delta\epsilon$ of said liquid composite material satisfies the relation $K_2/\Delta\epsilon < 9 \times 10^{-8} [\text{dyn}]$.

Please amend claims 6, 8, 13 and 14 as follows:

6. (twice amended) A liquid crystal composite material according to claim 4, wherein said liquid crystal composite material includes a liquid crystal chemical compound represented by a general chemical formula (I)

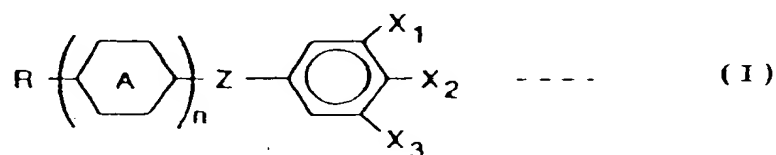


wherein in the formula (I), X_1 , X_2 and X_3 are selected from a group consisting of fluoro group, cyano group, trifluoromethyl group, trifluoromethoxyl group, nitro group and hydrogen atom, not all three X_1 , X_2 and X_3 being a hydrogen group; R is selected from a group consisting of alkyl group and alkoxyl group having the carbon number 1 to 10 which can be substituted; Ring A is selected from a group consisting of cyclohexane ring, benzene ring, dioxane ring, pyrimidine ring, and-bicyclohexane ring, Z is selected from a group consisting of single bonding, ester bonding, ether bonding, methylene, and ethylene; and n is 1 or 2.

8. (amended) In a liquid crystal display device having

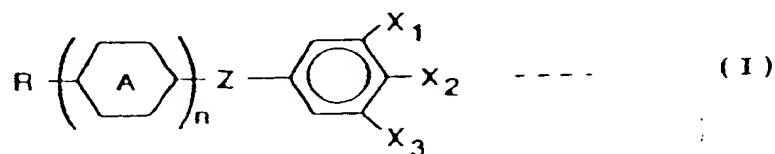
a liquid crystal layer interposed between a pair of substrates, and an electrode structure for generating an electric field having a component predominantly in parallel with one of said pair of substrates provided on one of said pair of substrates;

wherein said liquid crystal composite material includes a liquid crystal chemical compound represented by a general chemical formula (I)



wherein in the formula (I), X₁, X₂ and X₃ are selected from a group consisting of fluoro group, cyano group, trifluoromethyl group, trifluoromethoxyl group, nitro group and hydrogen atom, not all three X₁, X₂ and X₃ being a hydrogen group; R is selected from a group consisting of alkyl group and alkoxyl group having the carbon number 1 to 10 which can be substituted; Ring A is selected from a group consisting of cyclohexane ring, benzene ring, dioxane ring, pyrimidine ring, and-bicyclohexane ring, Z is selected from a group consisting of single bonding, ester bonding, ether bonding, methylene, and ethylene; and n is 1 or 2.

13. (twice amended) In a liquid crystal display device according to claim 12, wherein said liquid crystal composite material includes a liquid crystal chemical compound represented by a general chemical formula (I)



wherein in the formula (I), X_1 , X_2 and X_3 are selected from a group consisting of fluoro group, cyano group, trifluoromethyl group, trifluoromethoxyl group, nitro group and hydrogen atom, not all three X_1 , X_2 and X_3 being a hydrogen group; R is selected from a group consisting of alkyl group and alkoxyl group having the carbon number 1 to 10 which can be substituted; Ring A is selected from a group consisting of cyclohexane ring, benzene ring, dioxane ring, pyrimidine ring, and-bicyclohexane ring, Z is selected from a group consisting of single bonding, ester bonding, ether bonding, methylene, and ethylene; and n is 1 or 2.

14. (twice amended) In a liquid crystal display device according to claim 12, wherein said electrode structure include a pixel electrode spaced from a common electrode, and said pair of substrates are spaced from one another, wherein a relationship between a distance l between [a] said pixel electrode and [a] said common electrode [forming part of said electrode structure] and a distance d between said pair of substrates is $l/d \geq 2.0$.